5th Stakeholders General Assembly of the FCH JU

European field trials for residential fuel cell micro-CHP

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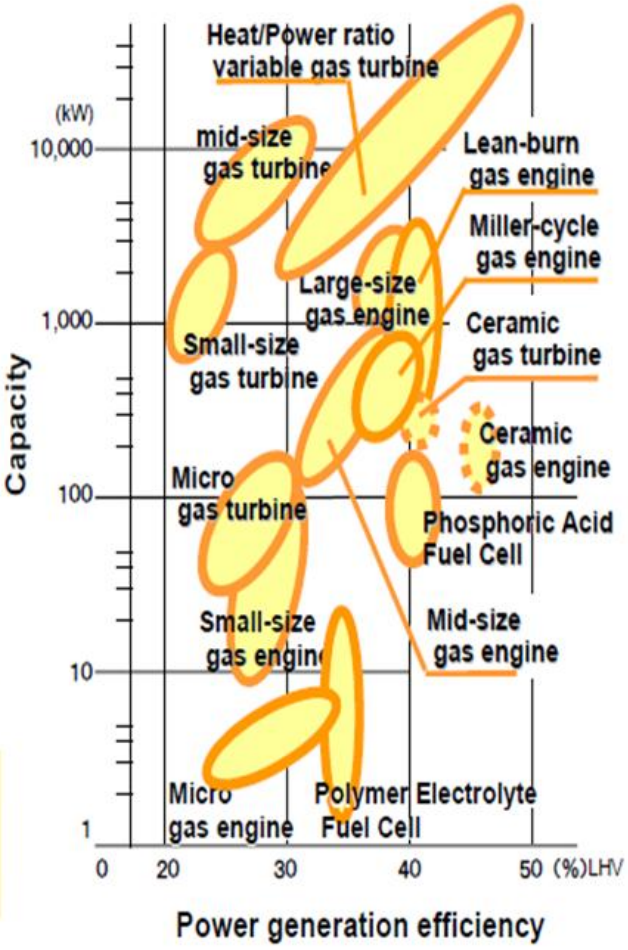
Wide-ranging line-up of cogeneration systems to meet customers' needs

Heat/Power ratio variable gas turbine

Mid-size gas engine

Small-size gas engine

Micro gas engine



Large-size gas engine

Miller-cycle gas engine

COGEN europe

Flavours of micro-CHP – Low Carbon House

Annual energy demand	<10,200 kWh
Heat demand	~12%
Electricity demand	~88%

Expertise in decentralised energy

PEFC

Ebara Ballard

Tokyo Gas & Panasonic

SOFC

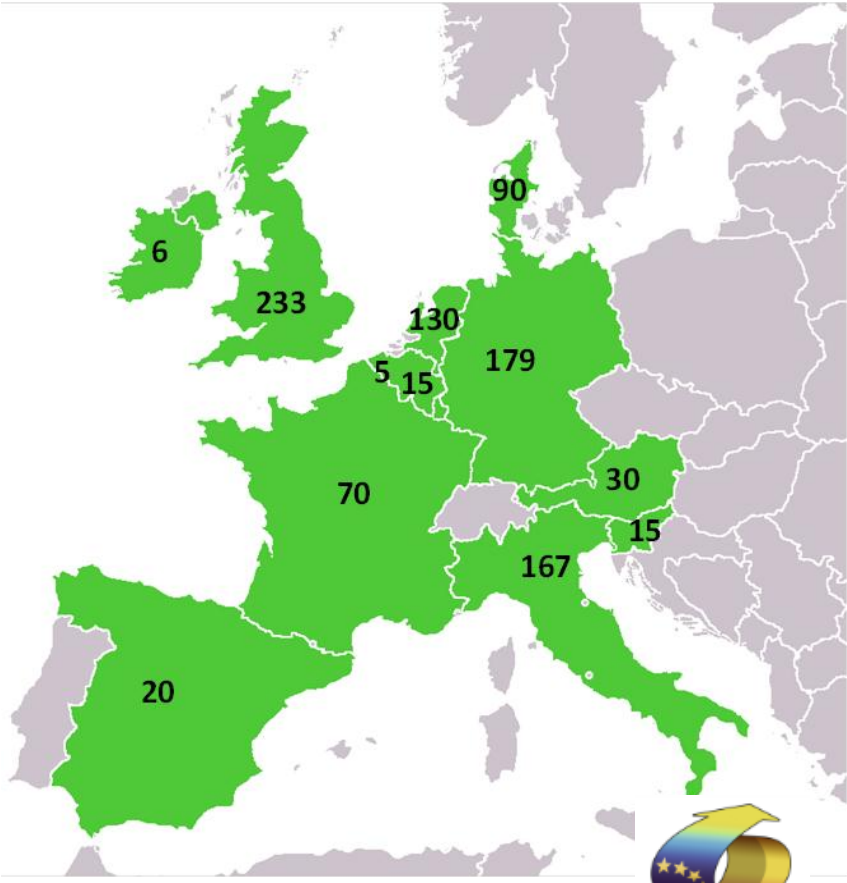
Ceramic Fuel Cells

Hexis

Osaka Gas & Kyocera

Micro-CHP deployment plan under ene.field

- 26 partners including manufacturers, utilities, research institutes and universities
- Project over 5 years
- Demonstration over 3 years in each case
- Lifecycle cost assessment, barriers report, commercialisation framework
- Jointly funded by the FCH JU and the partners



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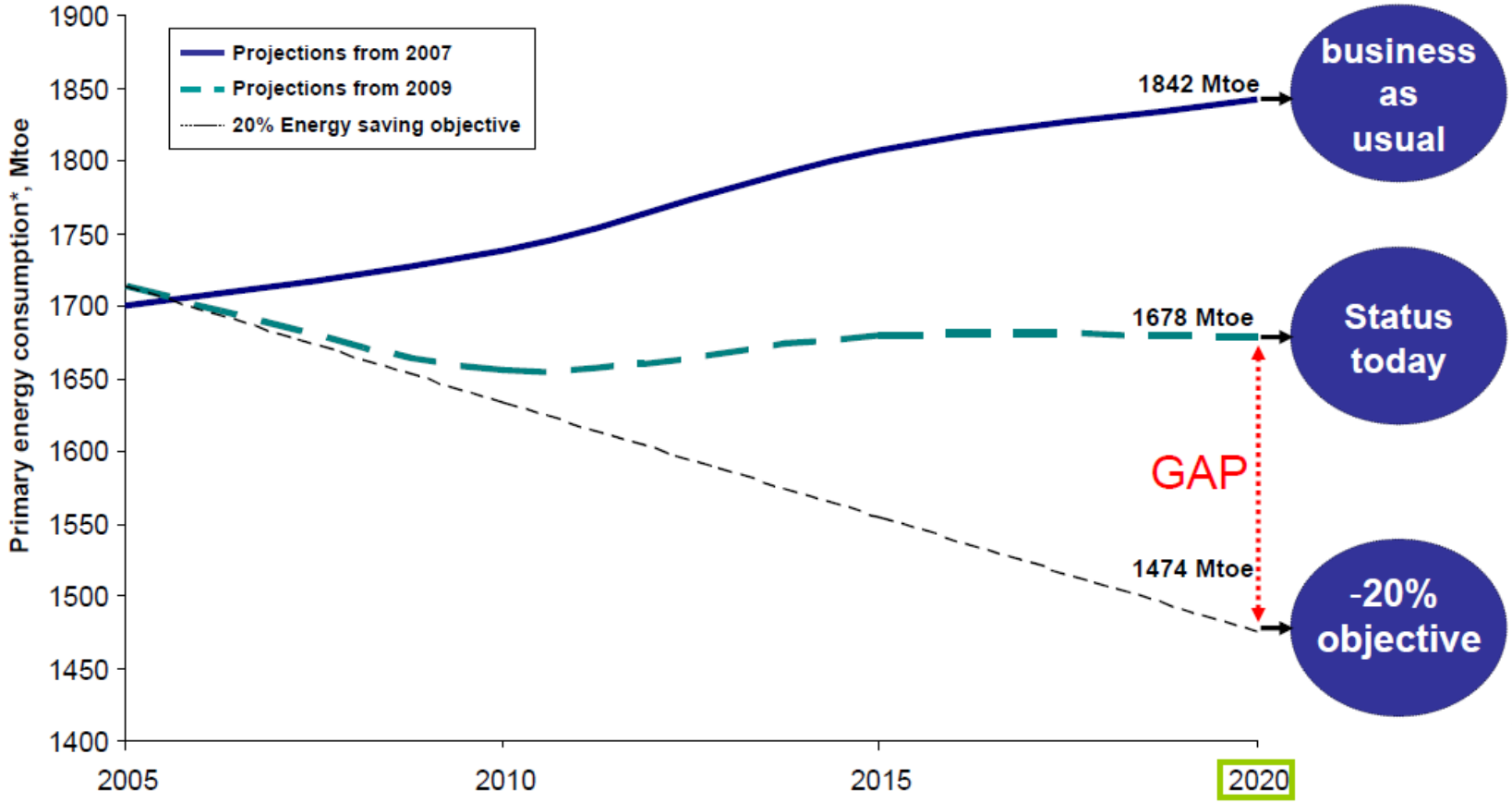
Outcomes

- **Real world learning -** demonstration of market potential, segmentation, cost and environmental benefits of micro FC-CHP
- **Developed market focused-product** specifications and harmonised codes and standards
- A **more mature supply chain**, readied for deployment of micro FC-CHP in 12 Member States
- **An evidence base on cost and environmental performance**, that can be used to accelerate policy support from governments and adoption by channels to market

Europe's 20-20-20 energy efficiency target



* Gross inland consumption minus non-energy uses

Role of hydrogen and fuel cells in a decarbonised energy system

- Pushes up the high efficiency of cogeneration
- Development path for traditional micro-CHP
- Adapted to the demands of homes to come
- Fits well with emerging smart grid structures

Integration of supply and customer technologies

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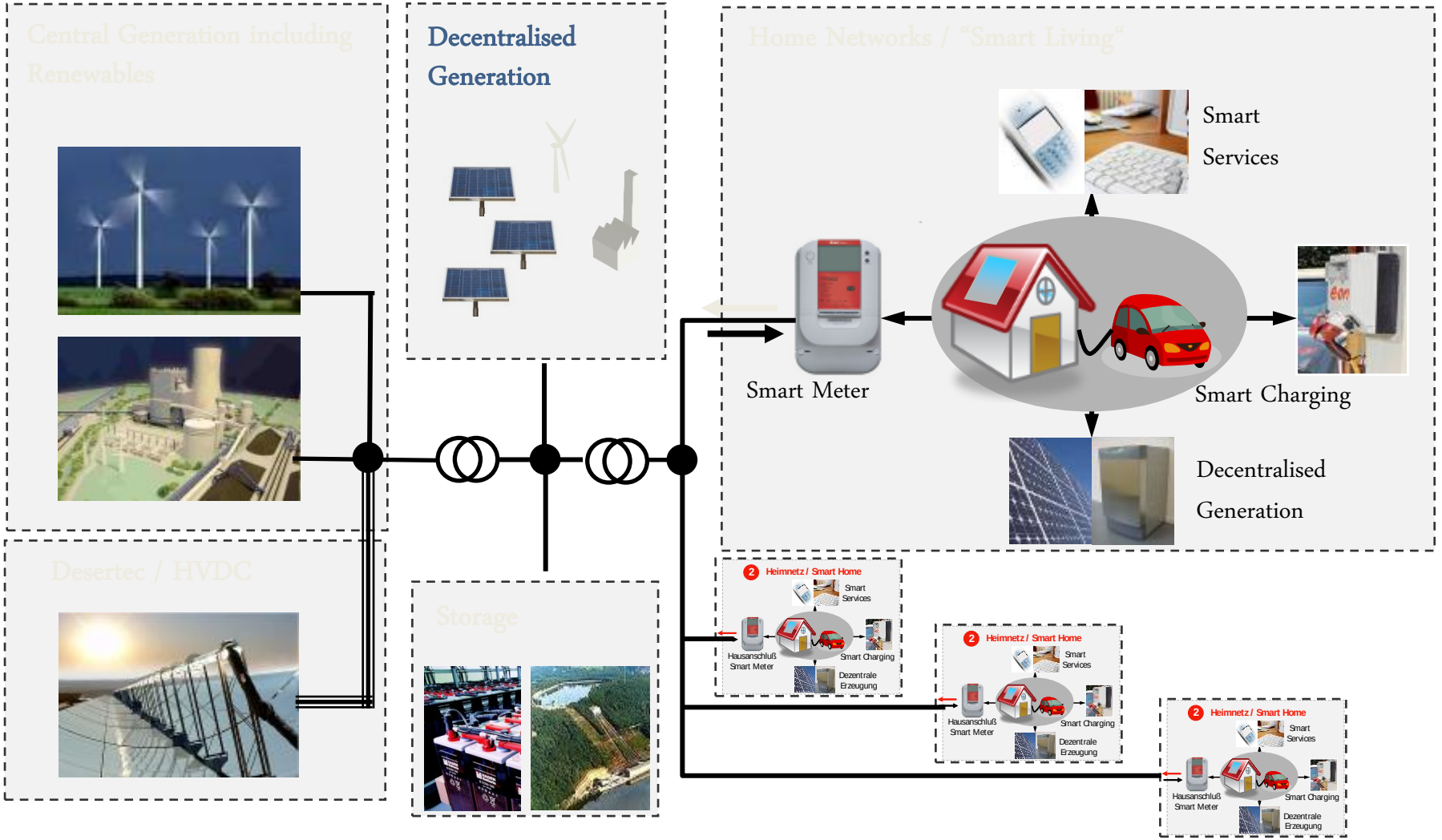

Projected growth in micro-CHP to 2050